

Technology policy and regional network creation in high-technology activities in developing countries

by Janaina Costa

Globelics Academy 2005

Presentation

1. Research Topic
2. Literature review
3. Research questions
4. Research method
5. Analytical framework
6. Pilot fieldwork
7. Current stage of research

1. Research Topic

The impact of technology policy on regional network creation in high-tech activities in developing countries.

Argument: developing countries must address technology policy if they aspire to socio-economic development (Chang, 1994 and Sagasti, 2002).

2. Literature Review

Four areas of:

- technology policy
- firms' innovation
- innovation networks
- network governance

2. Literature Review

Technology Policy

Economic transformation requires co-ordination and the set up of new institutional frameworks by the state (Chang and Rowthorn, 1995; Evans, 1995).

Government technology policy is vital for firms' innovation (Freeman and Soete, 1997).

2. Literature Review

Firms' Innovation

The importance of firm level:

1. Technological accumulation is localized in firms (Bell and Pavitt, 1992).
2. Their survival depends on their capacity to adapt to changes in the external environment and to influence it (Freeman and Soete, 1997).

2. Literature Review

Innovation Networks

Goes beyond the individualism of Schumpeter's 'heroic' entrepreneur (DeBresson and Amesse, 1991).

Particular attention must be paid to the formation of innovation networks (Freeman, 1991, OECD, 1992).

Networks articulate the agents and institutions involved in innovation. They need to interact to facilitate the collective appropriation of profit (OECD, 1992).

2. Literature Review

Network governance

The ties that hold different institutions within a network (von Tunzelmann, 2000).

The governance depends on the level of collaboration that institutions have between each other.

2. Literature Review

Conclusions:

1. Contrary to the literature, strong network governance is possibly not essential for firms' innovation and technology policy effectiveness.
2. In developing countries firms face more difficulties in innovating, for they are often embedded in weak networks. And it is common for technology policies to be discontinuous or inappropriate to firms' needs (Velho and Saenz, 2002).
3. Considering 1 and 2, it is necessary to bring evidences of technology policy effectiveness over firms, including the network governance role.

3. Research Question

In what ways does network governance at the regional level influence technology policies directed at firms' innovation?

4. Research Method

Comparison between two Brazilian Software networks: Campinas and Recife.

Both networks are aimed at by government technology policy through the SOFTEX Programme.

They are under the same 'umbrella', which allows me the comparison.

5. Analytical Framework

Technology Policy

- 1) Specifying, funding and supporting the emergence or improvement of institutions that develop any kind of scientific or technological activities
- 2) Imposing and negotiating new regulation in order to improve the relation among the agents involved in technological activities and innovation.
- 3) Imposing or negotiating new laws regarding import and export.
- 4) Implementing, inducing and diffusing either direct or indirect policies. Direct policies, such as: basic research, higher education, etc. Indirect policies: basic educations and training standards, competition policy, public investments, etc.

Network

- **Firms**
- Suppliers
- Clients
- Associations
- Technical institutes
- Universities
- Technological centres
- Learning institutes
- Local, regional or national government
- Research foundations



Network Governance

Strong

Medium

Weak

None

6. Pilot Fieldwork

Table: networks comparison

Networks/Characteristics	Campinas	Recife
HDI 2000	0,852	0,797
Network characteristics - age	1970's	1990's
Network characteristics - maturity	Mature	Young
Influence of SOFTEX - infra-structure	Low	High
Influence of SOFTEX - policy adoption	High	Low
Articulator's presence	No	Yes
Articulation	Low	High
Role of local university	Autonomous	Dependent
Network Governance	Weak	Strong

Sources: Pilot fieldwork interviews, August 2004.

HDI(Human Development Index) from UNDP (United Nations Development Programme)

7. Current Stage of Research

1. Literature review on issues suggested by the pilot results to be relevant for the thesis, such as: dynamic capabilities; firms strategy; software innovation systems; government policies.
2. Development of the full fieldwork methodology